

ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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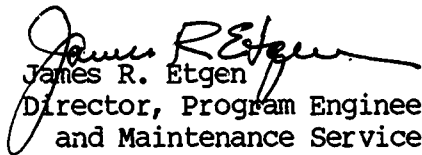
September 17, 1987

SUBJ: ORDER X-RADIATION FROM THYRATRON TUBES

1. PURPOSE. This order establishes procedures for limiting exposure to x-radiation emanating from thyatron modulator tubes at long range radar facilities (except ARSR-3).
2. DISTRIBUTION. This order is distributed to division level in the Program Engineering and Maintenance Service in Washington headquarters; to branch level within the regional Airway Facilities divisions; to the Airway Facilities sector field offices, sector field units, and sector field office units; to the Region/Center Safety and Health Managers; AAC-160; AAM-430; and Regional Flight Surgeons.
3. BACKGROUND. During routine radiation measurements of thyatron modulator tubes at long range radar sites, x-radiation levels which could potentially exceed the permissible exposure level were found when measurements were made with the cabinet doors open and the interlock switch bypassed. When the cabinet doors were closed, the x-radiation levels were negligent to non-detectable. In the worst case with the cabinet doors open, the permissible quarterly dosage could have been reached within 6 hours of unshielded exposure. Although work near an unshielded thyatron modulator tube is relatively infrequent, controls must be implemented to ensure that the permissible exposure level is not exceeded. The tubes found producing this x-radiation were ITT model 8789 and English Electric Valve CX 1670. Although manufacturers and models of thyatron modulator tubes may change, the potential for x-radiation is possible with any high voltage tube, and the procedures outlined in this order are applicable to other thyatron modulator tubes.
4. ACTION. At all long range radar sites (except ARSR-3 locations), the following safeguards shall be implemented:
 - a. Warning signs shall be placed on the outside of the thyatron modulator cabinet door alerting personnel to the potential for x-radiation exposure. Appropriate signs shall be mailed to affected facilities. If a facility does not receive the signs within 30 days of the effective date of this order, or desires extra copies, contact Jack Reilly, APM-104, FTS 267-8287.
 - b. The thyatron cabinet shall normally remain closed. When it is necessary for the cabinet to be opened with the equipment energized (such as when looking for electrical arcing), personnel shall maintain as much distance as practicable from the thyatron modulator tube. Viewing the inside of the cabinet should be accomplished from off to one side of the cabinet and not directly in front of the tube.

Distribution: A-W(PM)-2; A-X(AF)-3; A-FAF-2/3/7(LTD); Regional and Center Safety and Health Managers; AAC-160(5); AAM-430(5); Regional Flight Surgeons Initiated By: APM-104

c. Time spent near an unshielded, energized thyratron modulator tube shall be limited to the extent practicable, and no case shall exceed 6 hours per calendar quarter per individual.


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and Maintenance Service